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Commentary

Mostly Wrong Questions From a High Tech Heretic

By Keith R. Krueger

There is nothing like a controversial title to sell books, and Clifford Stoll's anti-computers-in-the-classroom treatise *High Tech Heretic: Why Computers Don't Belong in the Classroom & Other Reflections by a Computer Contrarian* (Doubleday, 1999) is chock-full of clever, but largely off-target, points.

Mr. Stoll, the author of a previous bestseller, *Silicon Snake Oil*, makes sweeping attacks on efforts to link all classrooms to the Internet. He steals a page from Todd Oppenheimer, the author of a July 1997 article in *The Atlantic Monthly* called "The Myth of Computers in the Classroom," and tries to expand that theme into a book around this hot topic.

The premise of the book answers the question "Should schools have computers in the classroom?" Mr. Stoll gives an unequivocal "No," citing page after page of examples where computers and/or the Internet have been misused. He sets up a straw man—that advocates of school networking want "computer literacy"—only to huff and puff till he blows down this point.

Yet, is "computer literacy" really what the education technology community is advocating? I don't think so.

Mr. Stoll states in the opening sentence of the book that we have a "relentless invocation of the cliché 'computer literacy.'" His definition of computer literacy is teaching kids how to keystroke, word-process, manipulate a spreadsheet, know what a database does, be able to use e-mail, and browse the World Wide Web.

Well, if that were how the debate is defined, most education technology champions would agree that we should throw in the towel. In fact, I would be the first to lead a bonfire to torch all the computers if that was all we were trying to do with computers in schools.

Maybe I have missed the debate that Mr. Stoll is hearing, but teaching computer skills is not the goal. Rather, the goal is to find ways to use computers and telecommunications to improve learning. Computers are nothing more than a tool—they are neither inherently good nor bad. Like books, you can use them in smart ways for learning, or you can do incredibly stupid things with them.

Mr. Stoll does a great job of lancing the overhype of politicians, computer companies, and educators who promise nirvana if we

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give every kid a fast computer with a high-speed connection to the Internet. Yet, in throwing out the dirty bath water of school technology zealots, he also throws out the baby. To Mr. Stoll, there is no middle ground: He seems never to have seen a positive use of computers or the Internet for learning at the K-12 level. From my perspective, he is as blind as those he criticizes.

My fear is that this book will bring us back to a simplistic debate: *Are computers good or bad?* That is the wrong question. Rather than miring ourselves in irrelevant lines of inquiry, let's refocus the debate.

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I propose that we reframe the question as: *Does our investment in education technology achieve our educational goals?* Or, to go more deeply, *How can computers and the Internet improve student achievement, provide greater equity, prepare kids for the 21st-century workforce?*

Clifford Stoll's book is all about shooting fish in a barrel by pointing out only poor and silly uses of computers. Most technology advocates concede that computers are not magic, and are not appropriate in every learning situation. But a computer, particularly one that is linked to the Internet, is a powerful tool when used by a talented teacher.

James A. Kulik, in a 1994 report ("Meta-analytic Studies of Findings on Computer-Based Instruction"), found that on average, students who used computer-based instruction scored at the 64th percentile on tests of achievement, compared with students in the control conditions

without computers, who scored at the 50th percentile. Students learned more in less time when they received computer-based instruction. And they liked their classes more and developed more positive attitudes when the classes included computer-based instruction.

Likewise, a review of research by J. Sivin-Kachala ("Report on the Effectiveness of Technology in Schools, 1990-1997") found that students in technology-rich environments experienced positive effects on achievement in all major subject areas. Students also showed increased achievement in preschool through higher education, regardless of whether they were regular or special-needs students. Their attitudes toward learning and their self-concept improved consistently when computers were used for instruction.

Computers and telecommunications enhance student achievement by: engaging and involving students; empowering students; and fostering the development of higher-order-thinking skills. (For a more complete discussion of these concepts, visit a site developed by the National School Boards Association and the Consortium for School Networking, called Edvancenet: www.edvancenet.org. *Ed. Note: This link is no longer valid, 12/10/01.*)

To be fair to Clifford Stoll, there is still a lot we don't know about the best way to use these new tools for learning. Let's face it, the Web is only a few years old, and even the business community is struggling to adapt to a digital world. But is the right answer to toss out the computers and lock the door? I don't think so.

The last half of Mr. Stoll's book has really nothing to do with computers in the classroom. Frankly, I found myself agreeing with his tirades about bad software, unresponsive "help desks," ugly computers that are planned for obsolescence, and boring presentation software. One wishes that he and other educational technology critics would stick to these themes, rather than masquerading as experts on K-12 educational technology.

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Vol. 19, Issue 27, Page 46

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Read "[The Computer Delusion](#)," by Todd Oppenheimer, The Atlantic Monthly, July 1997.

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